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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2020-1042; Special Conditions No. 25-804-SC]

Special Conditions: Dassault Aviation Model Falcon 6X Airplane; Electronic Flight-Control System and Control Surface Position Awareness.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Dassault Aviation (Dassault) Model Falcon 6X airplane. This airplane will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. This design feature is an electronic flight-control system requiring flight-control surface position awareness. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: This action is effective on Dassault on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Send comments on or before [INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Send comments identified by Docket No. FAA-2020-1042 using any of the following methods:

- *Federal eRegulations Portal:* Go to <https://www.regulations.gov/> and follow the online instructions for sending your comments electronically.

- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.

Privacy: Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in title 14, Code of Federal Regulations (14 CFR) 11.35, the FAA will post all comments received without change to <https://www.regulations.gov/>, including any personal information you provide. The FAA will also post a report summarizing each substantive verbal contact received about these special conditions.

Confidential Business Information: Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to these special conditions contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to these special conditions, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and the indicated comments will not be placed in the public docket of this Notice. Send submissions containing CBI to Troy Brown, Performance and Environment Section, AIR-625, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 1801 S. Airport Rd., Wichita, KS 67209-2190; telephone and fax 405-666-1050;

e-mail troy.a.brown@faa.gov. Comments the FAA receives, which are not specifically designated as CBI, will be placed in the public docket for this rulemaking.

Docket: Background documents or comments received may be read at <https://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Troy Brown, Performance and Environment Section, AIR-625, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 1801 S. Airport Rd., Wichita, KS 67209-2190; telephone and fax 405-666-1050; e-mail troy.a.brown@faa.gov.

SUPPLEMENTARY INFORMATION:

The substance of these special conditions has been published in the *Federal Register* for public comment in several prior instances with no substantive comments received. Therefore, the FAA finds, pursuant to § 11.38(b), that new comments are unlikely, and notice and comment prior to this publication are unnecessary.

Comments Invited

The FAA invites interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

The FAA will consider all comments received by the closing date for comments. The FAA may change these special conditions based on the comments received.

Background

On July 1, 2012, Dassault Aviation applied for a type certificate for their new Model Falcon 5X airplane. However, Dassault has decided not to release an airplane under the model designation Falcon 5X, instead choosing to change that model designation to Falcon 6X.

In February of 2018, due to engine supplier issues, Dassault extended the type certificate application date for their Model Falcon 5X airplane under new Model Falcon 6X. This airplane is a twin-engine business jet with seating for 19 passengers, and has a maximum takeoff weight of 77,460 pounds.

Type Certification Basis

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.17, Dassault must show that the Model Falcon 6X airplane meets the applicable provisions of part 25, as amended by amendments 25-1 through 25-146.

If the Administrator finds that the applicable airworthiness regulations (e.g., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Dassault Model Falcon 6X airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Dassault Model Falcon 6X airplane must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.17(a)(2).

Novel or Unusual Design Features

The Dassault Model Falcon 6X airplane will incorporate the following novel or unusual design feature: An electronic flight-control system (EFCS) and no direct coupling from the flight deck controller to the control surface.

Discussion

As a result of the EFCS and lack of direct coupling from the flight deck controller to the control surface, the pilot is not aware of the actual control surface position. Some unusual flight conditions, arising from atmospheric conditions and/or airplane or engine failures, may result in full or nearly full surface deflection. Unless the flightcrew is made aware of excessive deflection or impending control surface limiting, piloted or auto-flight system control of the airplane might be inadvertently continued in such a manner to cause loss of control or other unsafe stability or performance characteristics. The airworthiness standards do not contain adequate or appropriate safety standards for the conditions that result from the EFCS and lack of direct coupling from the flight deck controller to the control surface.

To establish a level of safety equivalent to that established in the regulations, these special conditions are established. These special conditions require that the flightcrew receive suitable flight-control position annunciation when a condition exists in which nearly full surface authority (not crew commanded) is being utilized. Suitability of such an alerting must take into account that some pilot-demanded maneuvers (e.g rapid roll) are necessarily associated with intended full performance, which may saturate the surface. Therefore, simple alerting systems, which would function in either intended or unexpected control-limiting situations, must be properly balanced between necessary crew awareness and unwanted nuisance factors. A monitoring system that might compare airplane motion, surface deflection, and pilot demand could be helpful in reducing nuisance alerting.

Additionally, these special conditions address flight control system mode annunciation. Suitable mode annunciation must be provided to the flightcrew for events that significantly change the operating mode of the system but do not merit the classic “failure warning.”

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Dassault Model Falcon 6X airplane. Should Dassault apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only a certain novel or unusual design feature on one model of airplane. It is not a rule of general applicability.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

Authority Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for the Dassault Aviation Model Falcon 6X airplane.

In addition to compliance with §§ 25.143, 25.671, 25.672, and 25.1322, the following special conditions apply:

1. The system design must ensure that the flightcrew is made suitably aware whenever the primary control means nears the limit of control authority.

Note: the term “suitably aware” indicates annunciations provided to the flightcrew are appropriately balanced between nuisance and that necessary for crew awareness.

2. If the flight-control system has multiple modes of operation, the system must alert the flight crew when the airplane enters any mode that significantly changes or degrades the normal handling or operational characteristics of the airplane.

Issued in Kansas City, Missouri, on May 10, 2023.

Patrick R. Mullen,
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Policy and Innovation Division,
Aircraft Certification Service.

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